Self-operated Temperature Regulators

Type 2430 K Thermostat

for Series 43 Valves

Type 2430 K Thermostat

Mounted on a Type 2432 K Valve (Type 43-2 Temperature Regulator)

Mounting and Operating Instructions

EB 2430 EN

Edition September 2014

Definition of signal words

DANGER!
Hazardous situations which, if not avoided, will result in death or serious injury

WARNING!
Hazardous situations which, if not avoided, could result in death or serious injury

NOTICE
Property damage message or malfunction

Note:
Additional information

Tip:
Recommended action

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1 General safety instructions

– The thermostat must be installed, started up or serviced by fully trained and qualified personnel only; the accepted industry codes and practices are to be observed. Make sure employees or third persons are not exposed to any danger.
– All the warnings given in these mounting and operating instructions must be strictly observed.
– According to these mounting and operating instructions, trained personnel refers to individuals who are able to judge the work they are assigned to and recognize possible dangers due to their specialized training, their knowledge and experience as well as their knowledge of the applicable standards.
– To ensure appropriate use, only use the thermostat in applications where the operating pressure and temperatures do not exceed the specifications used for sizing the thermostat at the ordering stage.
– The manufacturer does not assume any responsibility for damage caused by external forces or any other external factors.
– Any hazards that could be caused in the thermostat by the process medium, operating pressure or by moving parts are to be prevented by means of the appropriate measures.
– Proper transport, storage, installation, operation and maintenance are assumed.
– SAMSON does not assume any liability for damage caused when the device is not used as intended.

2 Process medium and scope of application

When used in combination to a Series 43 Valve, the Type 2430 K Thermostat (adsorption principle) is used as a temperature regulator suitable for liquids, gases and vapors up to operating pressures up to 40 bar. It is particularly suitable for use in district heating supply networks.

Refer to the Mounting and Operating Instructions of the temperature regulators for details:

- EB 2171 EN Types 43-1 and 43-2 Regulators
- EB 2172 EN Types 43-5, 43-6 and 43-7 Regulators
- EB 2173 EN Type 43-3 Regulator
- EB 2178 EN Type 43-8 Regulator (with Type 2430 K vapor pressure thermostat) Refer to EB 2430-3 EN for details on fast-responding Type 2430 K vapor pressure thermostats.

Testing according to DIN EN 14597

The Type 2430 K Thermostat is tested by the German Technical Inspectorate (TÜV) according to DIN EN 14597 using the type designation 2750-0. The register number is available on request.

2.1 Storage

Store within permissible ambient temperature range (–20 to +80 °C). Protect the thermostat against adverse influences, such as dirt or moisture during storage.

3 Design and principle of operation

The thermostat works according to the adsorption principle.

The temperature of the controlled medium creates a pressure in the sensor (11) which is proportional to the measured temperature. This pressure is transferred through the capillary tube (10) to the operating element (13) and converted into a positioning force. The valve stem (4) is moved by the operating bellows (9) and pin of the operating element (12).

By turning the set point adjuster (8), the point of response and the set point are changed over the spring (7).

4 Installation

Note:
Make sure that the permissible ambient temperature does not fall below –20 °C or exceed 80 °C.

Install the valve in a horizontal pipeline. The control thermostat must be suspended to hang downward.

Other mounting positions are possible under certain operating conditions. Refer to the mounting and operating instructions of the temperature regulator.

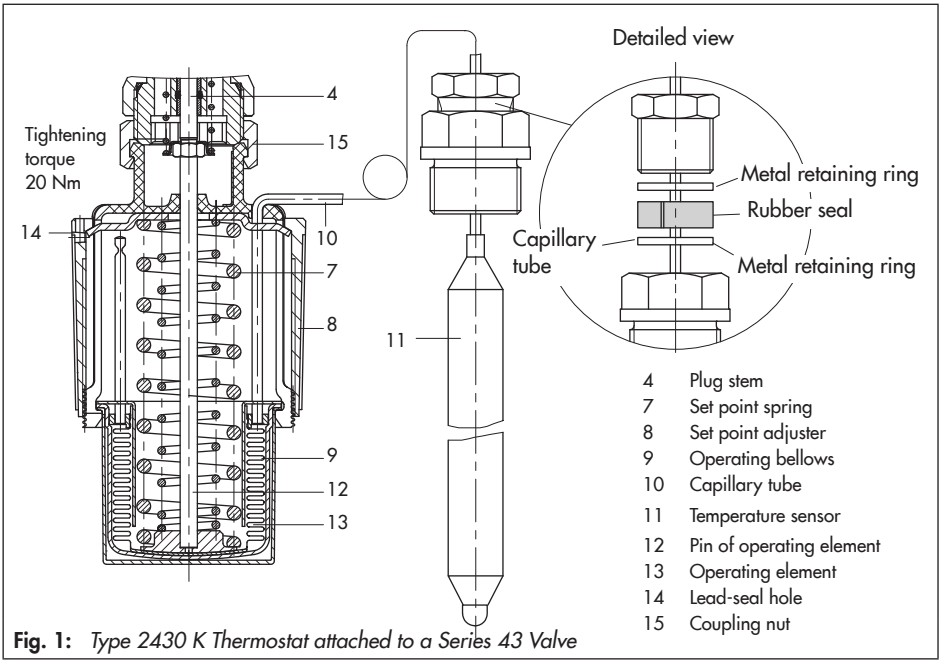


Fig. 1: *Type 2430 K Thermostat attached to a Series 43 Valve*

Install a thermometer immersed in the medium to be controlled, close to the sensor. This allows you to monitor the adjusted set point temperature and regulate the set point at the thermostat accordingly.

4.1 Installing the temperature sensor

The temperature sensor may be installed in any position. However, make sure its entire length is immersed in the process medium to be controlled. Select a place of installation where overheating and noticeable idle times will not occur. Weld a welding socket with G ½ female thread (for a sensor with 9.5 mm diameter) or G ¾ female thread (for a sensor with 16 mm diameter) at the place of installation.

Seal the screw gland or thermowell in the welded-in socket and tighten the clamping screw to fasten it.

> **NOTICE**
> *On installing the sensor or thermowell, only use similar materials (e.g. stainless steel with stainless steel or copper together with other copper materials) to prevent corrosion.*

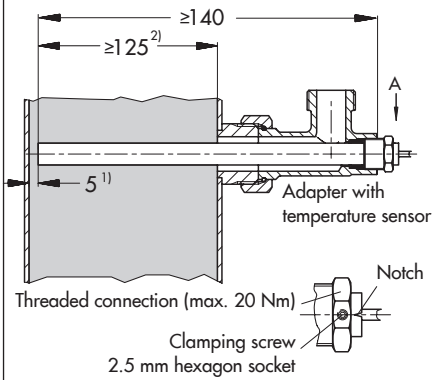
Special version with thermostat (operating according to the vapor pressure principle)

Refer to ▶ EB 2430-3 EN for special installation instructions.

The temperature sensors operating according to the vapor pressure principle are particularly suitable for use in plate heat exchangers due to the fast response time of approx. 3 s.

To install the sensor in a plate heat exchanger, insert it horizontally into the hot water duct, making sure that the notch on the sensor faces upward.

Screw the sensor's thread connection into the adapter. Align the sensor using the clamping screw and tighten it by hand.



All dimensions in mm

1) Plate heat exchanger <130 mm
2) Plate heat exchanger >130 mm

Fig. 2: *Sensor (working according to the vapor pressure principle), installation in plate heat exchanger*

4.1.1 Capillary tube

Install the capillary tube in such a way that mechanical damage cannot occur. The minimum bending radius is 50 mm. Any excess length of the capillary tube must be rolled up into a ring. Do no bend or shorten the capillary tube under any circumstances.

Make sure that the temperature at the capillary tube remains within the permissible ambient temperature range and is not exposed to considerable temperature fluctuations.

Table 1: *Thermostats (operating according to the vapor pressure principle) · Mounting position and materials*

Type 2430 K Thermostats (according to vapor pressure principle) · 45 to 65 °C						
Plate heat exchangers [1]	Configuration ID (Var.-ID)		1058730		1109125	
	Sensor position	Horizontal	•			
		Tip facing upward	–			
		Tip facing downward	–			
	Sensor material	CrNiMo steel	•			
	Sensor connection, screw gland		G ½		Without	
	Length of capillary tube		2 m			
Shell-and-tube or coaxial heat exchangers	Configuration ID (Var.-ID)		1045853	1067861	1045883	1072710
	Sensor position	Horizontal	•	•	•	•
		Tip facing upward	–	–	•	•
		Tip facing downward	•	•	–	–
	Sensor material	Copper	•	–	•	–
		CrNiMo steel	–	•	–	•
	Sensor connection, screw gland		G ½			
	Length of capillary tube		2 m			

[1] Type 43-8, with instantaneous plate heat exchangers

5 Operation

5.1 Adjusting the set point

Turn the black plastic adjuster (8) to adjust the set point while watching the reference thermometer. The adjustment diagrams can be used as a guide to find the first approximate values.

The temperature changes are specified in Table 2 per turn of the thermostat

Turning the adjuster clockwise (↻):

– The (set point) temperature is reduced.

Turning the adjuster counterclockwise (↻):

– The (set point) temperature is raised.

The adjusted set point can be lead-sealed at the hole (14).

Table 2: *Adjustment values*

Set point ranges	**0** to **35 °C**		**25** to **70 °C**		**40** to **100 °C**		**50** to **120 °C**		**70** to **150 °C**	
Sensor Ø in mm	9.5	16	9.5	16	9.5	16	9.5	16	9.5	16
Changes per turn in K	2.5	2	3	2	4	3	4	4.5	4.5	5

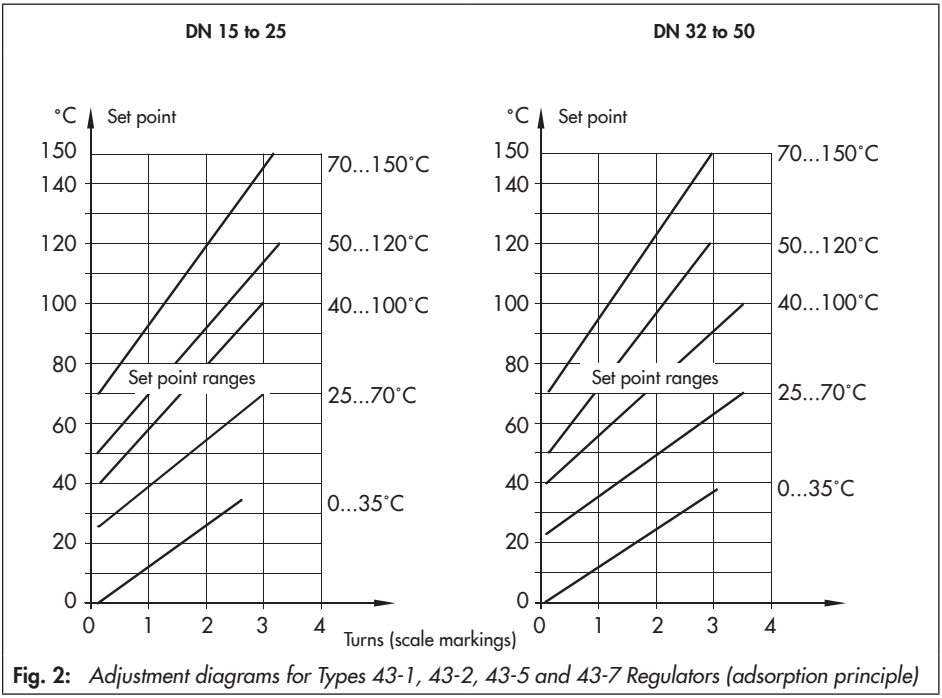


Fig. 2: *Adjustment diagrams for Types 43-1, 43-2, 43-5 and 43-7 Regulators (adsorption principle)*

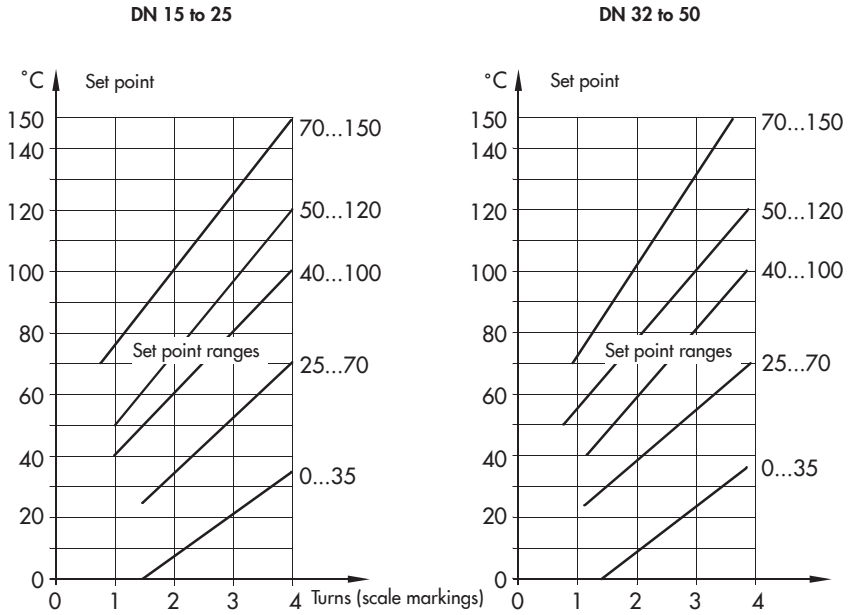


Fig. 3: *Adjustment diagrams for Type 43-6 Regulator (adsorption principle)*

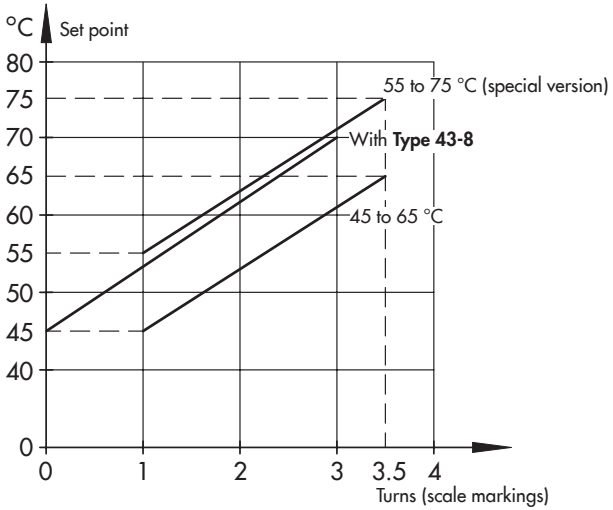


Fig. 4: *Adjustment diagrams for Type 43-8 Regulator (Type 2430 K vapor pressure thermostat)*

6 Technical data

Table 3: *Technical data*

Thermostat	Type 2430 K Adsorption principle		Type 2430 K Vapor pressure principle
Version	Control thermostat		Fast-response control thermostat
For valve size	DN 15 to 25	DN 32 to 50	DN 15 to 50
	G ½ to G 1	–	G ½ to G 1
Sensor connection	G ½	G ¾	G ½
Set point ranges	0 to 35 °C · 25 to 70 °C · 40 to 100 °C 50 to 120 °C · 70 to 150 °C		45 to 65 °C
Permissible ambient temperature range	–20 to +80 °C		
Capillary tube length	2 m		
Sensor	Ø 9.5 x 170 mm, copper, PN 25	Ø 16 x 210 mm, copper, PN 25	Ø 10 x 170 mm [1], copper, PN 25
Mounting position	Any desired position		Horizontal or tip pointing up/down

[1] Sensor Ø 12 x 170 mm or Ø 12 x 160 mm: Horizontal mounting position for plate heat exchanger

Table 4: *Accessories*

Order listed accessories from SAMSON, specifying the order number.

Sensor connection		Order no.	G ½	G ¾
Type 2430 K thermowell	Copper, PN 40		1390-8984	1090-8465
	CrNiMo steel, PN 40		1390-8983	1190-1522
Types 2430 K and 2439 K: thermowell for flammable gases typetested by DVGW, PN 100, made of CrNiMo steel			1180-9510	1180-9511
Intermediate insulating piece [1] (for Type 43-3 and Type 43-6) for medium temperature down to –15 °C with red brass valve bodies			1990-1712	–
Double adapter Do3 K			1180-8632	–
Manual adjuster [2]			1790-8169	–

[1] Not with oil-resistant version

[2] A double adapter Do3 K is required when used together with Type 2430 K

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